

WHAT IS CLAIMED IS:

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1. A recording/reproducing apparatus for recording and reproducing information, said recording/reproducing apparatus comprising:

10 a main stabilizing member rotating a recordable disk having flexibility and suppressing surface vibration of the recordable disk in at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect; and

15 a recording/reproducing part conducting a recording and/or reproducing process at a reverse side being opposite to an action surface of an aerodynamic effect, the action surface being a main surface of the recordable disk,

20 wherein the recordable disk surface is divided into two regions by a first straight line being approached to a movement line for the recording/reproducing part to scan and passing a vicinity of a center of the recordable disk, and an auxiliary stabilizing member is arranged in at least one of the two regions so that a counterforce of the recordable disk surface is increased, in which the counterforce occurs
25 when the main stabilizing member is influenced by occurring

an aerodynamic action force on the recordable disk surface at a location where the main stabilizing member is located.

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2. The recording/reproducing apparatus as claimed in claim 1, wherein at least one auxiliary stabilizing member is arranged in a region located at a downstream side in a disk rotational direction with respect to the recording/reproducing part, said region being one of the two regions.

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3. The recording/reproducing apparatus as claimed in claim 1, wherein at least one auxiliary stabilizing member is arranged in a region located at an upstream side in a disk rotational direction with respect to the recording/reproducing part, said region being one of the two regions.

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4. The recording/reproducing apparatus as
claimed in claim 1, wherein at least one auxiliary
stabilizing member is arranged in each of the two regions,
5 respectively.

10 5. The recording/reproducing apparatus as
claimed in claim 1, wherein in a case in that a rotation center
part of the recordable disk is held by a holding member, a
location of an action point of a force of the auxiliary
stabilizing member against the recordable disk is arranged
15 in a region on a recordable disk surface,

wherein the region is sandwiched between a first
perpendicular straight line at one side closer to the main
stabilizing member and a second perpendicular straight line
at another side farther from the main stabilizing member,

20 wherein the first and second perpendicular
straight lines pass through two points, respectively, where
the first straight line passing in the vicinity of the center
of the recordable disk crosses a circumferential part
connecting fulcrum locations where flexibility starts when
25 the main stabilizing member is pressed and flexed to the

recordable disk, and the first and second perpendicular straight lines are perpendicular to the first straight line.

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6. The recording/reproducing apparatus as claimed in claim 4, wherein in a case in that a rotation center part of the recordable disk is held by a holding member, a
10 location of an action point of a force of the auxiliary stabilizing member against the recordable disk is arranged in a vicinity of the first perpendicular line in a region on a recordable disk surface,

wherein the region is sandwiched between the
15 first perpendicular straight line at one side closer to the main stabilizing member and the second perpendicular straight line at another side farther from the main stabilizing member,

wherein the first and second perpendicular
20 straight lines passing two points, respectively, where the first straight line passing in the vicinity of the center of the recordable disk crosses a circumferential part connecting fulcrum locations where flexibility starts when the main stabilizing member is pressed and flexed to the
25 recordable disk, and the first and second perpendicular

straight lines are perpendicular to the first straight line.

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7. The recording/reproducing apparatus as claimed in claim 4, wherein at least two auxiliary stabilizing members, in which at least one of the auxiliary stabilizing members is located in each of the two regions, make a pair and an action point of a force of each of the auxiliary stabilizing members against the recordable disk is located on a parallel line being parallel to the first or second perpendicular straight line.

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8. The recording/reproducing apparatus as claimed in claim 7, wherein the action points are set so as to locate symmetrically on the recordable disk surface.

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9. The recording/reproducing apparatus as

claimed in claim 1, wherein each of the auxiliary stabilizing members is arranged to a chassis as a main body of the recording/reproducing apparatus.

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10. The recording/reproducing apparatus as claimed in claim 9, wherein a relative position between the auxiliary stabilizing member and a holding member for holding a rotation center part of the recordable disk is fixed.

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11. A recording/reproducing apparatus for recording and reproducing information, said recording/reproducing apparatus comprising:

20 a main stabilizing member rotating a recordable disk having flexibility and suppressing surface vibration of the recordable disk in at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect; and

25 a recording/reproducing part conducting a recording and/or reproducing process at a reverse side being

opposite to an action surface of an aerodynamic effect, the action surface being a main surface of the recordable disk,

wherein a recordable disk surface is divided into two regions by a first straight line being approached to a movement line for the recording/reproducing part to scan and
5 passing a vicinity of a center of the recordable disk, and an auxiliary stabilizing member is arranged in at least one of the two regions so that a counterforce of the recordable disk surface is increased, in which the counterforce occurs
10 when the main stabilizing member is influenced by occurring an aerodynamic action force on the recordable disk surface at a location where the main stabilizing member is located,

wherein at least one auxiliary stabilizing member is arranged in the two regions, respectively, and a
15 counterforce received by the auxiliary stabilizing member from the recordable disk is greater than counterforces received by any other auxiliary stabilizing member arranged in regions on the recordable disk other than the main stabilizing member.

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12. A disk cartridge for accommodating the
25 recordable disk having flexibility and provided with a

mechanism for applying a main stabilizing member for
suppressing surface vibration of the recordable disk at least
in a vicinity of a recording/reproducing location by
utilizing an aerodynamic effect when the recordable disk is
5 rotated,

wherein a recordable disk surface is divided into
two regions by a first straight line being approached to a
movement line for a recording/reproducing part provided in
a recording/reproducing apparatus side to scan and passing
10 a vicinity of a center of the recordable disk, and an auxiliary
stabilizing member is arranged in at least one of the two
regions so that a counterforce of the recordable disk surface
is increased, in which the counterforce occurs when the main
stabilizing member is influenced by occurring an aerodynamic
15 action force on the recordable disk surface at a location
where the main stabilizing member is located.

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13. The disk cartridge as claimed in claim 12,
wherein the auxiliary stabilizing member is mounted on an
inside wall.

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14. The disk cartridge as claimed in claim 12,
wherein a location of the auxiliary stabilizing member is
5 adjustable.

10 15. A recording/reproducing apparatus for
recording and/or reproducing information by rotating a
recordable disk having flexibility, said
recording/reproducing apparatus comprising:
a main stabilizing member for suppressing
15 surface vibration of the recordable disk at least in a
vicinity of a recording/reproducing location by utilizing
an aerodynamic effect; and
a recording/reproducing part for recording
and/or reproducing information on a reverse side of an action
20 surface of the aerodynamic effect by the main stabilizing
member,
wherein:
a recordable disk surface is divided into eight
regions A, B, C, D, E, F, G, and H at approximately 45°
25 intervals where a second straight line is defined as a

starting point, the second straight line being approached to a movement line for the recording/reproducing part to scan and passing a vicinity of a center of the recordable disk;

the main stabilizing member is arranged at a
5 location corresponding to the second straight line; and

at least one action point of aerodynamic force is provided by the auxiliary stabilizing member at each of portions where the recordable disk provides the flexibility in the region B from approximately 45° to approximately 90°
10 and the region C from approximately 90° to approximately 135° with respect to the starting point.

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16. A recording/reproducing apparatus for recording and/or reproducing information by rotating a recordable disk having flexibility, said recording/reproducing apparatus comprising:

20 a main stabilizing member for suppressing surface vibration of the recordable disk at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect; and

a recording/reproducing part for recording
25 and/or reproducing information on a reverse side of an action

surface of the aerodynamic effect by the main stabilizing member,

wherein:

a recordable disk surface is divided into eight
5 regions A, B, C, D, E, F, G, and H at approximately 45°
intervals where a second straight line is defined as a
starting point, the second straight line being approached
to a movement line for the recording/reproducing part to scan
and passing a vicinity of a center of the recordable disk;
10 the main stabilizing member is arranged at a
location corresponding to the second straight line; and
at least one action point of aerodynamic force
is provided by the auxiliary stabilizing member at each of
portions where the recordable disk provides the flexibility
15 in the region F from approximately 225° to approximately
 270° and in the region G from approximately 270° to
approximately 315° with respect to the starting point.

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17. A recording/reproducing apparatus for
recording and/or reproducing information by rotating a
recordable disk having flexibility, said
25 recording/reproducing apparatus comprising:

a main stabilizing member for suppressing surface vibration of the recordable disk at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect; and

5 a recording/reproducing part for recording and/or reproducing information on a reverse side of an action surface of the aerodynamic effect by the main stabilizing member,

 wherein:

10 a recordable disk surface is divided into eight regions A, B, C, D, E, F, G, and H at approximately 45° intervals where a second straight line is defined as a starting point, the second straight line being approached to a movement line for the recording/reproducing part to scan
15 and passing a vicinity of a center of the recordable disk;

 the main stabilizing member is arranged at a location corresponding to the second straight line; and

 at least one action point of aerodynamic force is provided by the auxiliary stabilizing member at each of
20 portions where the recordable disk provides the flexibility in the region B from approximately 45° to approximately 90° , the region C from approximately 90° to approximately 135° , the region F from approximately 225° to approximately 270° with respect to the starting point, and the region G from
25 approximately 270° to approximately 315° with respect to the

starting point.

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18. The recording/reproducing apparatus as claimed in claim 15, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region B is arranged at a vicinity of a boundary
10 between the region A from the starting point to approximately 45° and the region B.

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19. The recording/reproducing apparatus as claimed in claim 16, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region G is arranged at a vicinity of a boundary
20 between the region H from the starting point to approximately 315° and the region G.

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20. The recording/reproducing apparatus as claimed in claim 17 wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region B is arranged in the region A from the starting point to approximately 45° and the region B, and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region G is arranged at a vicinity of a boundary between the region H from the starting point to approximately 315° and the region G.

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21. The recording/reproducing apparatus as claimed in claim 17, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region B and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region G are symmetrically arranged so as to sandwich the second straight line.

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22. The recording/reproducing apparatus as

claimed in claim 17, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region C and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region F are symmetrically arranged so as to sandwich the second straight line.

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23. The recording/reproducing apparatus as claimed in claim 15, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region B and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region C are arranged so that a straight line connecting the action points in the regions B and C is set to be parallel to the second straight line.

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24. The recording/reproducing apparatus as claimed in claim 16, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that

exists in the region F and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region G are arranged so that a straight line connecting the action points in the regions F and G is set to be parallel
5 to the second straight line.

10 25. The recording/reproducing apparatus as claimed in claim 17, wherein the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region B and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the
15 region C are arranged so that one straight line connecting the action points in the regions B and C is set to be parallel to the second straight line, and the action point of the aerodynamic force of the auxiliary stabilizing member that exists in the region F and the action point of the aerodynamic
20 force of the auxiliary stabilizing member that exists in the region G are arranged so that another straight line connecting the action points in the regions F and G is set to be parallel to the second straight line.

26. The recording/reproducing apparatus as
claimed in claim 15, wherein an approximate line of a movement
5 line in the disk radial direction of the
recording/reproducing apparatus in an actual
recording/reproducing region on the recordable disk surface
is defined as the second straight line.

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27. The recording/reproducing apparatus as
claimed in claim 15, wherein the auxiliary stabilizing
15 members are mounted in a chassis of a main body of the
recording/reproducing apparatus.

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28. The recording/reproducing apparatus as
claimed in claim 27, wherein a relative location between the
auxiliary stabilizing members and a holding member for
holding a rotation center portion of the recordable disk is
25 fixed.

5 29. The recording/reproducing apparatus as
claimed in any one of claims 15, 16, and 17, wherein other
auxiliary stabilizing members other than the auxiliary
stabilizing members are arranged and counterforces received
from the auxiliary stabilizing members are maximized in said
10 other auxiliary stabilizing members arranged in any of the
regions A, B, C, D, E, F, G, and H other than the main
stabilizing member.

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30. A disk cartridge for accommodating the
recordable disk having flexibility and provided with a
mechanism for applying a main stabilizing member for
20 suppressing surface vibration of the recordable disk at least
in a vicinity of a recording/reproducing location by
utilizing an aerodynamic effect when the recordable disk is
rotated,

wherein:

25 a recordable disk surface is divided into eight

regions A, B, C, D, E, F, G, and H at approximately 45° intervals where a second straight line is defined as a starting point, the second straight line being approached to a movement line for the recording/reproducing part to scan
5 and passing a vicinity of a center of the recordable disk;
the main stabilizing member is arranged at a location corresponding to the movement line; and
at least one action point of aerodynamic force is provided by the auxiliary stabilizing member at each of
10 portions where the recordable disk provides the flexibility in the region B from approximately 45° to approximately 90° and the region C from approximately 90° to approximately 135° with respect to the starting point.

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31. The disk cartridge as claimed in claim 30, wherein the auxiliary stabilizing members are mounted on an
20 inside wall of the disk cartridge.

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32. The disk cartridge as claimed in claim 30,

wherein locations of the auxiliary stabilizing members are adjustable.

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33. A recording/reproducing apparatus for recording and/or reproducing information by rotating a recordable disk having flexibility, said

10 recording/reproducing apparatus comprising:

a main stabilizing member for suppressing surface vibration of the recordable disk at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect; and

15 a recording/reproducing part for recording and/or reproducing information on a reverse side of an action surface of the aerodynamic effect by the main stabilizing member,

20 wherein the recordable disk surface is divided into two regions by a first straight line being approached to a movement line for the recording/reproducing part to scan and passing a vicinity of a center of the recordable disk, and an auxiliary stabilizing member is arranged in at least one of the two regions so that a counterforce of the recordable
25 disk surface is increased, in which the counterforce occurs

when the main stabilizing member is influenced by occurring
an aerodynamic action force on the recordable disk surface
at a location where the main stabilizing member is located,
and further the main stabilizing member is extended by facing
5 the movement line for the recording/reproducing part to scan
in a disk radial direction.

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34. The recording/reproducing apparatus as
claimed in claim 33, wherein at least one auxiliary
stabilizing member is arranged in a region located at a
downstream side in a disk rotational direction with respect
15 to the recording/reproducing part, said region being one of
the two regions.

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35. The recording/reproducing apparatus as
claimed in claim 33, wherein at least one auxiliary
stabilizing member is arranged in a region located at an
25 upstream side in a disk rotational direction with respect

to the recording/reproducing part, said region being one of the two regions.

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36. The recording/reproducing apparatus as claimed in claim 33, wherein at least one auxiliary stabilizing member is arranged in each of the two regions,
10 respectively.

15 37. The recording/reproducing apparatus as claimed in claim 33, wherein in a case in that a rotation center part of the recordable disk is held by a holding member, a location of an action point of a force of the auxiliary stabilizing member against the recordable disk is arranged
20 in a region on a recordable disk surface,

wherein the region is sandwiched between the first perpendicular straight line at one side closer to the main stabilizing member and the second perpendicular straight line at another side farther from the main
25 stabilizing member,

wherein the first and second perpendicular
straight lines passing two points, respectively, where the
first straight line passing in the vicinity of the center
of the recordable disk crosses a circumferential part
5 connecting fulcrum locations where flexibility starts when
the main stabilizing member is pressed and flexed to the
recordable disk, and the first and second perpendicular
straight lines are perpendicular to the first straight line.

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38. The recording/reproducing apparatus as
claimed in claim 36, wherein in a case in that a rotation
15 center part of the recordable disk is held by a holding member,
a location of an action point of a force of the auxiliary
stabilizing member against the recordable disk is arranged
in a vicinity of the first perpendicular line in a region
on a recordable disk surface,

20 wherein the region is sandwiched between the
first perpendicular straight line at one side closer to the
main stabilizing member and the second perpendicular
straight line at another side farther from the main
stabilizing member,

25 wherein the first and second perpendicular

straight lines passing two points, respectively, where the first straight line passing in the vicinity of the center of the recordable disk crosses a circumferential part connecting fulcrum locations where flexibility starts when
5 the main stabilizing member is pressed and flexed to the recordable disk, and the first and second perpendicular straight lines are perpendicular to the first straight line.

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39. The recording/reproducing apparatus as claimed in claim 36, wherein at least two auxiliary stabilizing members, in which at least one of the auxiliary
15 stabilizing members is located in each of the two regions, make a pair and an action point of a force of each of the auxiliary stabilizing members against the recordable disk is located on a parallel line being parallel to the first or second perpendicular straight line.

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40. The recording/reproducing apparatus as
25 claimed in claim 33, wherein each of the auxiliary

stabilizing members is arranged to a chassis as a main body of the recording/reproducing apparatus.

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41. The recording/reproducing apparatus as claimed in claim 33, wherein a curvature radius, in which a shape in a disk circumferential direction on a surface of the main stabilizing member facing the recordable disk is formed so as to be an approximate circular, is set to be smaller from a disk inside perimeter to a disk outside perimeter.

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42. The recording/reproducing apparatus as claimed in claim 33, wherein an effective region width of the main stabilizing member in a disk circumferential direction is set to be smaller from a disk inside perimeter to a disk outside perimeter.

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43. The recording/reproducing apparatus as claimed in claim 33, wherein a curvature radius, in which a shape in a disk circumferential direction on a surface of the main stabilizing member facing the recordable disk is formed so as to be an approximate circular, is set to be smaller from a disk inside perimeter to a disk outside perimeter and an effective region width of the main stabilizing member in a disk circumferential direction is set to be smaller from a disk inside perimeter to a disk outside perimeter.

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44. A disk cartridge for accommodating a recordable disk having flexibility, comprising:

a main stabilizing member for suppressing surface vibration of the recordable disk at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect when the recordable disk is rotated; and

at least one auxiliary stabilizing member occurring an action force facing the main stabilizing member on the recordable disk surface where the main stabilizing

member is located by occurring an aerodynamic action force at least one of two regions into which the recordable disk surface is divided by a first straight line being approached to a movement line for a recording/reproducing part provided
5 in a recording/reproducing apparatus side to scan and passing a vicinity of a center of the recordable disk,

wherein the main stabilizing member is mounted on an inside wall of said disk cartridge so as to extend by facing the movement for the recording/reproducing part to
10 scan in a disk radial direction.

15 45. A disk cartridge for accommodating a recordable disk having flexibility, comprising a main stabilizing member extending by facing a movement for the recording/reproducing part to scan in a disk radial direction and suppressing surface vibration of the recordable disk at
20 least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect when the recordable disk is rotated,

wherein a recordable disk surface is divided into two regions by a first straight line being approached to a
25 movement line for a recording/reproducing part provided in

a recording/reproducing apparatus side to scan and passing a vicinity of a center of the recordable disk, and an auxiliary stabilizing member is mounted on an inside wall of said disk cartridge so that a counterforce of the recordable disk surface is increased, in which the counterforce occurs when the main stabilizing member is influenced by occurring an aerodynamic action force toward at least one of the two regions on the recordable disk surface at a location where the main stabilizing member is located.

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46. A disk cartridge for accommodating a recordable disk having flexibility, comprising a main stabilizing member suppressing surface vibration of the recordable disk at least in a vicinity of a recording/reproducing location by utilizing an aerodynamic effect when the recordable disk is rotated,

20 wherein the main stabilizing member is mounted on an inside wall of said disk cartridge so as to extend by facing a movement for the recording/reproducing part to scan in a disk radial direction, and

a recordable disk surface is divided into two regions by a first straight line being approached to a

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movement line for a recording/reproducing part provided in
a recording/reproducing apparatus side to scan and passing
a vicinity of a center of the recordable disk, and an auxiliary
stabilizing member is mounted on an inside wall of said disk
5 cartridge so that a counterforce of the recordable disk
surface is increased, in which the counterforce occurs when
the main stabilizing member is influenced by occurring an
aerodynamic action force toward at least one of the two
regions on the recordable disk surface at a location where
10 the main stabilizing member is located.

15 47. The disk cartridge as claimed in claim 44,
wherein location of the main stabilizing member and the
auxiliary stabilizing member are adjustable.